

UNLOCKING THE UNCHARTED USES OF THE PHENOMENAL

Syzygium cumini

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ABSTRACT

Syzygium cumini, commonly known as Jamun or black plum, is an indigenous Indian fruit with numerous health benefits. Rich in antioxidants, flavonoids, polyphenols, iron, and vitamin C, this tropical evergreen plant from the Myrtaceae family has been used in traditional medicine for centuries. Jamun has been employed to treat various ailments, including metabolic conditions such as obesity, diabetes, hypertension, and hyperlipidemia. Despite its potential, the fruit's benefits remain largely untapped. This essay explores the nutritional value of Jamun and highlights its potential in combating metabolic syndromes.



KEYWORDS: Food industry Morphology, Nutrition, Therapeutics

INTRODUCTION

A priceless medicinal plant belonging to the Myrtaceae family, the Jamun tree has long been used in traditional Indian and worldwide medicine. This is a vital medicinal plant and an evergreen flowering plant that has historically been used to treat a wide range of illnesses in tropical areas of Bangladeshi, Sri Lankan, Indian, and Pakistani healthcare systems (Sagar and Dubey, 2019). Its seeds, commonly referred to as "Maghz-e-Jamun or Tukhm-e-Jamun," have the ability to lower blood sugar levels in people with intermediate hyperglycemia. It is anticipated that 13.5 million tons of jamun will be produced worldwide, with 15.4% coming from India (Kshirsagar et al., 2019).

GROWTH CONDITIONS AND MORPHOLOGY

In semi-arid subtropical climates with 350–500 mm of annual precipitation, it can be grown with success. It can also be seen growing up to 1300 meters in altitude in the lower Himalayan regions. It can be cultivated in wasteland, resource-poor, arid, and semiarid regions where other crops are hard to produce. It may be grown in ravines and degraded areas and can withstand salinity and sodic soils.

According to reports, plants can thrive on alkaline soils with a pH of up to 10.5. The plant should be generally avoided planting in areas of heavy rain (Prakash Tripathi, 2020).



Figure 1. *Syzygium cumini* (a) Fruits

(b) Seeds

Jamun is also referred to as java plum or black plum. With white branch tips and reddish-brown juvenile shoots that grow to a height of 8 to 15 meters, Jamun is a silky smooth, well-developed tree. The opposite, glossy, leathery leaves have a broad, sharp tip and are obovate to oval or obovate-elliptic, measuring 6 to 12 cm in length (Kumar and Singh, 2021). The fruit's rich purple color and the seed's range of white to pink were among its physical attributes. According to reports, the Jamun fruit and seed measured 31 and 18.20 mm in length, 28.7 and 11.05 mm in width, and 18.32 and 1.62 g in weight (Kshirsagar et al., 2019).

NUTRITIONAL COMPOSITION

Jamun's chemical composition includes 1.02 mg of crude fat (1.18–4.50%), 3.84 to 7.17 mg of crude protein (6.3–8.5%), 22.8 g to 31.6 g (41%), 7.01 mg of crude fiber (2.64–16.9%), 0.6 mg of calcium (0.41%), and 0.072 mg of phosphorus (0.17%) (Kshirsagar et al., 2019) (Binita et al., 2017). Further, Table 1 showed the phytochemical present in different parts of Jamun.

Table 2. Phytochemicals present in Jamun fruit (Ramteke et al., 2015)

Plant part	Chemicals present
Seeds	Jambosine, gallic acid, ellagic acid
Stem bark	Friedelin, betulinic acid, kaempferol
Flowers	Quercetin, oleanolic acid, myricetin
Fruit pulp	Petunidin, anthocyanin, delphinidin
Leaves	Crategolic acid, n-hepatcosane, n-triacontanol
Essential oils	Eucarvone, muurolol, 8-cineole

PHARMACOLOGICAL AND THERAPEUTIC ACTIVITIES

According to the Unani medical system, jamun has a variety of pharmacological properties, including astringent, hemostatic, antidiabetic, urinary incontinence, and sexual tonic properties. (Rather et al., 2019). Its properties include being astringent, carminative, stomachic, diuretic, antidiabetic, anti-inflammatory, anti-radiation, gastroprotective, antioxidant, anti-allergic, antibacterial, anticancer, and cardioprotective. Glycosides, fat, resin, albumin, chlorophyll, gallic acid, 1-galloylglucose, 3-galloylglucose, quercetin, and metals including zinc, chromium, vanadium, potassium, and sodium are produced by the variety of chemical components found in seeds (Kumar and Singh, 2021).

Its fruit and leaves are beneficial to those with diabetes. It relieves the symptoms of diabetes, like pushing and frequent urination. For the treatment, the bark, seeds, and leaves extracts work incredibly well (Joshi et al., 2019). It's associated with numerous micro- and macrovascular issues. (Parveen et al., 2020). It can even aid in the treatment of liver and cardiac issues. It is a good source of ascorbic acid and iron. In India, the dried and powdered jamun seed is widely used to treat diabetes (Sagar and Dubey, 2019). Jamun seed powder has long been used as a home remedy for digestive and cardiovascular issues, as well as a natural means of preserving a healthy blood sugar level (Sood et al., 2018). Jamun is one of the most nutrient-dense and perishable tiny fruits. Numerous anthocyanins found in it have anti-analgesic properties (Ghosh et al., 2017)

APPLICATIONS IN FOOD INDUSTRY

The jamun fruit is rich in nutrients and has multiple applications, utilizing every part of the tree. The taste of jamun fruit is peppery and sub-acid, and squash makes a wonderfully cool beverage (Prakash Tripathi, 2020). Premium jamun juice works wonders for "squash," syrup, and sherbet. The latter is a

bottled beverage made in India that is made by heating crushed fruits to 140°F for five to ten minutes, then pressing off the juice and mixing it with water and sugar. Sodium benzoate and citric acid are then added as preservatives. Ripe fruits are used to make wine, preserves, squash, jellies, and health beverages. If not cooked for a short time, the white-fleshed jamun has enough pectin to produce an extremely stiff jelly (Ramteke et al., 2015).

CONCLUSION

Significant amounts of antioxidants, polyphenols, flavonoids, minerals, vitamins, and phytochemicals can be found in the peel, pulp, and seed of the jamun. Several investigations demonstrate the pharmacological relationship between metabolic problems and jamun. Traditionally, jamun has been used to treat a wide range of illnesses, most notably diabetes and its consequences. Studies pertaining to Jamun's antineoplastic properties indicate that it acts specifically on breast cancer cells. The jamun plant, particularly its fruit and seeds, has been shown to have major health benefits in a number of research that were included in this study. Thus, it's critical to encourage this medicinal plant's wider agricultural and industrial development and to start campaigns to raise public awareness of its health benefits. Novel concepts regarding its routine ingestion are still sought, as they could augment the assimilation of multiple noteworthy bioactive constituents from jamun to combat diverse ailments. The health advantages of jamun should be promoted to urban populations through both raw and value-added products, with a particular focus on supporting Indian tribal communities' jamun growers.

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